**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

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| In the Matter of | ) | |
| | ) | |
| Service Rules for the 698-746, 747-762 and 777-792 MHz Bands | ) | WT Docket No. 06-150 |
| | ) | |
| Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems | ) | CC Docket No. 94-102 |
| | ) | |
| Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones | ) | WT Docket No. 01-309 |
| | ) | |
| Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services | ) | WT Docket No. 03-264 |
| | ) | |
| Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules | ) | WT Docket No. 06-169 |
| | ) | |
| Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band | ) | PS Docket No. 06-229 |
| | ) | |
| Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010 | ) | WT Docket No. 96-86 |

To: The Commission

## COMMENTS OF NORTHROP GRUMMAN INFORMATION TECHNOLOGY, INC.

Northrop Grumman Information Technology, Inc. ("Northrop Grumman") hereby submits its Comments in response to the *Further Notice of Proposed Rulemaking* in the above-

captioned proceeding,[1] wherein the Commission seeks comment on various issues concerning competitive bidding and service rules for the 700 MHz band.

Northrop Grumman has participated extensively in earlier stages of the rule makings concerning the 700 MHz Public Safety Band and Guard Bands, and shares the Commission's vision of fostering wireless broadband for public safety on a nationwide, interoperable basis while maximizing the potential of the entire 700 MHz band. A confluence of many issues has led to the *Further Notice* and a unique window of opportunity to improve vastly public safety communications, augment the commercial broadband wireless marketplace, and foster synergy and collaboration between them. As set forth below, the Commission's tentative conclusions and key remaining issues can be resolved to achieve these ends.

## I. The Commission Should Proceed With Reconfiguring the Public Safety Band for Broadband and Consolidating the Narrowband Spectrum

Northrop Grumman applauds the Commission for reaching the conclusion to redesignate the present "wideband" portion of the 700 MHz Public Safety Band for broadband use and to consolidate the narrowband segments of the band to the upper half of the band.[2] As the Commission and nearly all commenters in this proceeding recognize, the benefits of broadband wireless services for public safety are manifest.[3] Broadband wireless can support mobile use of existing highly advanced applications, and myriad other features and functions that will be developed, or harnessed from the commercial world, operating on Internet Protocol and other platforms. In contrast, "wideband" (SAM / TIA-902) is at best a niche technology with a small vendor community, lacking the large potential customer base and market scale necessary to yield

[1] *Report and Order and Further Notice of Proposed Rulemaking*, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands,* WT Docket No. 06-150 *et al.,* FCC 07-72 (April 27, 2007) ("*Further Notice*").
[2] *Further Notice* at ¶¶ 250-53.
[3] *See*, *e.g.*, *Comments of Northrop Grumman Information Technology* in WT Docket No. 96-86, filed on June 6, 2006 ("*NG Comments*") at 2-3.

low cost network equipment and user devices such as exist in the commercial wireless equipment market. With wideband, public safety entities face the continuing opportunity cost of estrangement from future innovation in commercial wireless technology centered on broadband.

On all counts including affordability, efficiency and functionality, broadband technologies equal -- or in most cases excel over -- the capabilities of the "wideband" SAM / TIA-902 technology for all environments, urban, suburban and rural.[4] From a spectrum management standpoint, wideband is a disharmonious neighbor to broadband, due to the significantly higher transmit power densities of wideband technology and its heavy reliance on frequency coordination to avoid interference.[5] The broadband portion of the 700 MHz Public Safety band should not be saddled with the compromises and inefficiencies of accommodating wideband operations. The Commission should allow only broadband operations and should not permit any wideband operations.[6]

As urged by nearly everyone commenting in this proceeding, consolidating the narrowband spectrum into one contiguous block will greatly benefit public safety and the entire Upper 700 MHz Band. The Commission should move forward with consolidation of the narrowband segments into the upper half of the 700 MHz Public Safety Band.

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[4] Lucent Technologies, Inc. has documented in great detail that the purported advantages of the "wideband" Scalable Adaptive Modulation (SAM) / TIA-902 standard -- such as lower costs, fewer base transmit sites, less potential for intermodulation and other interference, and greater "wide area coverage" and "data rates near the coverage fringe" -- are completely unfounded. *See Comments of Lucent Technologies, Inc.* in WT Docket No. 96-86, filed June 6, 2006 ("*Lucent Comments*") at 13-28, 36-37, Exhibit B at 1-6, Exhibit C, Exhibit E at 1-8, Exhibit G at 1-12 (comparing SAM / TIA-902 to cdma2000 1x Evolution-Data Optimized Rev A). *See also ex parte* letter from Michael T. McMenamin, Esq., Lucent, to Marlene H. Dortch, Secretary, Federal Communications Commission in WT Docket Nos. 96-86 and 05-157 (dated Nov. 10, 2005) at 10 (many commercial broadband standards have much greater spectrum reuse efficiency than SAM / TIA-902, simplifying the coordination process by the 700 MHz Regional Planning Committees). Broadband technologies more advanced than EV-DO Rev. A (used by Lucent in these analyses) are even more robust and attractive from a total cost, coverage and performance standpoint in comparison to SAM / TIA-902.

[5] *See*, *e.g.*, *Lucent Comments* at 17, 36, Exhibit B at 3.

[6] According to the Commission, no wideband stations are presently licensed, and only two wideband systems operate pursuant to Special Temporary Authority. *Further Notice* at ¶251 n.513. Inasmuch as STAs are inherently temporary and without expectancy of renewal, and in view of the incompatibility and inherent spectral inefficiency in accommodating wideband operations in a broadband environment, the Commission should not grandfather these two wideband facilities.

## II. The Commission Should Adopt Band Proposal 3, or a Modified Version of Proposals 4 or 5, and Should Reject Proposals 1 and 2

In choosing the band plan for Upper 700 MHz, it is vital that there be a single homogeneous allocation of narrowband and broadband spectrum throughout the nation, including the border regions with Canada and Mexico. This will assure that narrowband interoperability channels are available nationwide and without any requirement of frequency shifts or migrations in the future. In addition, the band plan should meet another prerequisite sought by public safety – a funding mechanism that will relieve public safety from having to bear the costs of consolidating the narrowband spectrum.

Only proposals 3, 4 and 5 proposed by the Commission[7] achieve these goals. These proposals permit interoperable narrowband communications nationwide by spreading the interoperability channels among the spectrum aligned with the TV channel 63/68 pair and the TV channel 64/69 pair. This ensures that interoperability channels are available everywhere including all border areas. The costs of public safety for narrowband consolidation will be paid by the Guard Band licensees if proposal 3, 4 or 5 is adopted.[8]

Proposals 1 and 2 do not meet these objectives. They would temporarily move narrowband channel assignments in border regions, creating an incompatibility with non-border areas and resulting in a loss of universal interoperability. Moreover, there would be added cost and burden in shifting the public safety systems to and from these temporary assignments. It is not clear if or how public safety's costs of narrowband consolidation would be paid, since the Guard Band licensees have indicated they will not pay these costs if the Commission adopts proposal 1 or 2.

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[7] *Id.* at ¶¶ 194-206.

[8] It is Northrop Grumman's understanding that the Guard Band licensees (other than the licensee for the Gulf of Mexico, whose participation is not essential) are agreeing to pay these costs if proposal 3, 4 or 5 is adopted.

Northrop Grumman supports the goal of fostering shared infrastructure synergies between public safety networks and commercial carriers. Such opportunities can be realized organically as a natural outgrowth of the technological shift to broadband and the resulting commonality of architecture, and also by action of the Commission establishing a particular framework for public-partnership such as the proposal of Frontline Wireless, LLC ("Frontline") to auction a commercial license for a new "E Block" with specific obligations to build out a common broadband infrastructure for public safety and commercial use, in conjunction with a national public safety licensee.[9]

If the Commission does not adopt the Frontline proposal, then proposal 3 is appropriate, and the Commission should adopt it in its entirety as urged by its proponents.[10] If the Commission adopts the Frontline proposal or a similar one, then proposals 4 or 5 are appropriate inasmuch as they include the requisite "E Block." However, Northrop Grumman urges that the Commission modify proposal 4 or 5 to change the size of the E Block from 10 MHz (2 x 5 MHz) to 12 MHz (2 x 6 MHz) and to correspondingly reduce the size of the C and D blocks from 11 MHz (2 x 5.5 MHz) each to 10 MHz (2 x 5 MHz) each. This modification is essential to ensure that the E Block licensee will have sufficient total spectrum access (a minimum of 22 MHz, including secondary access to the 10 MHz of useable broadband Public Safety spectrum) to

[9] *See Further Notice* at ¶¶ 268-76.

[10] Proposal 3 was proposed by Access Spectrum, L.L.C. and Pegasus Communications Corporation and is based on elements of the Broadband Optimization Plan ("BOP") proposed by them and other Guard Band licensees. The BOP was supported by an overwhelming consensus of public safety entities as well as other commenters including Northrop Grumman. *See Comments of Northrop Grumman Information Technology, Inc.* in PS Docket No. 06-229 and WT Docket No. 96-86, filed February 26, 2007 ("*NG 9th NPRM Comments*"), at 3-5; *Reply Comments of Northrop Grumman Information Technology, Inc.* in WT Docket Nos. 06-169 and 96-86, filed November 13, 2006, at 2-5. Northrop Grumman continues to urge the Commission to consider the BOP, and the big picture of potential improvements in both the public safety and commercial bands that can be achieved with it. S*ee*, *e.g., See NG Comments* at 6-7, 8-10; *Reply Comments of Northrop Grumman Information Technology* in WT Docket No. 96-86, filed on July 6, 2006, at 2-3, 6. Northrop disagrees with the Commission's analysis that it lacks the legal authority to adopt the BOP, with the Commission's unsupported assertion that the BOP could result in interference, and its tentative conclusion that the BOP would not serve the public interest. *Further Notice* at ¶¶ 227-42. Northrop Grumman urges the Commission to reconsider these points and to adopt the BOP.

support its economic undertakings and obligations including the build-out and operation of the combined public safety / commercial network.[11]

## III. Local and Regional Interim Broadband Build-Outs Should be Permitted by Public Safety

If the Commission adopts the Frontline proposal or a similar one establishing a national network build-out for public safety, Northrop Grumman urges the Commission to permit flexibility to allow interim deployment of local or regional broadband networks by public safety entities in areas where the national broadband network build-out will not occur in the near term. The Commission should require that any such systems be built in consultation and coordination with the national licensee, so that the interim network architecture will harmonize with and be capable of being integrated into the national broadband network. This will ensure the most compatible and efficient usage of spectrum and create the opportunity for the local or regional interests to recoup all or some of their interim build-out expenditures by selling such facilities to the national network at the cessation of interim operation, thereby avoiding waste of public safety resources and at the same time aiding the build-out of the ultimate national network. It is critical that any such local and regional interim networks have available to them the full 5 MHz pair of Public Safety broadband spectrum to enable them to use advanced 4G broadband wireless technologies, and not be limited to just a fraction of the spectrum in the 5 MHz pair for such interim networks.

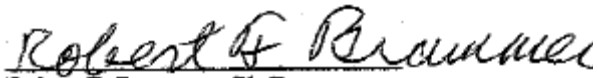
[11] The commercial operator must have enough spectrum capacity to generate significant economic value and justify building the substantial combined network infrastructure. *NG 9th NPRM Comments* at 7-8. In response to the Commission's proposal in the *Ninth NPRM,* Northrop Grumman commented that use of just 12 MHz of Public Safety spectrum was not sufficient. *Id*. at 6-7. By contrast, the proposal of Cyren Call Communications Corporation had a "very real prospect of substantial economic value deriving from carrier-grade commercial services operating on the unused excess capacity of a 30 MHz public safety shared system." *Id*. at 7.

**Conclusion**

The Commission can meaningfully improve both the public safety and commercial spectrum band plans in the Upper 700 MHz band by amending its rules as set forth above.

Respectfully submitted,

**NORTHROP GRUMMAN INFORMATION TECHNOLOGY, INC.**



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